Welcome page

Timetable

Background

- Local info
- Water issues
- Projects
- Characterization
- Sample article (pdf)
- How to use Bergey's Manuals

Methods

- Rules
- Media/culture
- Aseptic technique
- Staining/interpretation
- Isolation strategies
- Assays/characterization
- Microscopy
- Cultural characteristics

Media preparation and training

- Training sessions
- Media preparation
- Laboratory safety and conduct

Experimental Biosciences Resources

Spring semester 2016 syllabus

Welcome to our laboratory course in microbiology, two sections of which are offered every semester. This course will have you working in teams on two projects, one to characterize bacterial species that you isolate from locally collected samples and the second to assess the quality of water samples from a hypothetical system of lakes. Much of the work will be self-scheduled and self-paced. However we must have several scheduled meetings, so please look over the Timetable and arrange your schedule so that you can attend. A link to the Timetable, which includes assignment due dates and a timeline for progress on the two projects, is posted in the left menu.

Instructors and office hours

David Caprette, Professor in the Practice
ABL 327 – third floor Anderson Biological laboratory Building
caprette@rice.edu
713-348-3498 (campus extension 3498)
Office hours: Please see the table at the bottom of this page

Charles Stewart, Professor of Biochemistry
GBH W104
crs@rice.edu
713-348-4926 (campus extension 4926)
Office hours TBD

Preparing for the course

Review the meeting schedule for your lab section and block out the scheduled times on your calendar. You must not schedule conflicting events on the listed days at the listed times, nor let anyone schedule an event for you. We excuse absences due to circumstances beyond a student's control. Planned events such as travel for interviews are not considered to be beyond your control.

Bioc 211, Intermediate Experimental Biosciences, is a prerequisite for this course and Bioc 311, Advanced Experimental Biosciences, is highly recommended for its emphasis on teamwork, time management, writing, and quantitative skills.

Side menu

Adequate preparation is essential. Before we begin the laboratory work please look over the information under Background. The four background pages on the local community, water issues, projects, and characterizing isolates provide the rationale behind the projects and place the studies in context. You will be consulting Bergey's manuals and the methods manual as you work with your bacterial isolates. The content of training sessions and information on preparing media for the projects can be found under Media preparation and training, and I've included a convenient link to our Experimental Biosciences Resources in case you want to review how to keep a laboratory record, recommendations for technical writing, etc.

Bergey's manual

Each team will need one or two copies of Bergey's Manual of Determinative Bacteriology, 1994 or 2000 edition (they are the same), for use in identifying unknown bacteria. Here are recommended options for you:

- Each team may borrow up to two volumes from the laboratory. A $50 cash deposit will be required per volume. Your deposit will be returned provided there are no additional marks on the pages and the book is returned in its original condition, minus normal wear and tear. See "How to use Bergey's Manuals" for suggestions on how to use the tables without marking on them.
- You are welcome to purchase a copy yourself (recommended if you feel compelled to write in the book). A typical retail price is around $120, however there are bargains out there, including new Manuals for under $80 and used ones in good condition for less than $50. Make sure that you purchase the 1994 or 2000 edition.

Determining the course grade

Please see the Timetable for specific due dates. In addition to feedback received during the course, each student will receive a complete course grade breakdown at the time that final grades are submitted.

Laboratory notebook – 20%

Copies of notebook pages and a complete table of contents are to be compiled and submitted to the instructor at the time the laboratory work is completed. Place in instructor's mail box, IN box, or hand in the materials personally.

Starting with the second lab meeting (preparing agar plates and learning serial dilutions and the spread plate technique), each individual is to start and maintain a laboratory notebook according to academic standards,

preparing copy pages for all notes and table of contents (contents may be photocopied if the inside front cover is used). The table of contents is to be regularly updated, and pages numbered and dated, with legible entries organized with the usual sections and headings, as taught in experimental biosciences (Bios 111, 211, and 311). Record your own individual activities and observations so that your lab record reflects your personal contribution to the projects.

You are welcome to start with a partly filled notebook from another course, even one obtained from another student. New notebooks can be purchased from the campus store or, for a MUCH better price, ordered directly from the distributor. Please purchase a Hayden-McNeil Carbonless TOP Permanent Lab Notebook, 50 Set or 100 Set, from WH Freeman (url below).

http://whfreeman.com/Catalog/product/hayden-mcneilcarbonlessspirallabnotebook%28100set%29-firstedition-hayden-mcneil/formatsandpackages/studentpurchaseoptions

Notebook grading criteria. Is the notebook kept to academic standards as learned from prior Bioc laboratory courses? Is the documentation complete? Were the notes taken in a timely manner? Do the notes reflect a reasonable effort clearly indicating that the student kept up with his/her responsibilities?

Team poster and individual interview – 30%

An outline (at minimum) or draft of the actual poster (preferable) is to be uploaded into a team member's Drop Box by the date listed in the Timetable. The final copy of the poster is to be uploaded by the listed due date in the same Drop Box.

Each team will prepare a poster on the water analysis project, based upon the results of the MTF analysis and heterotrophic plate counts. The poster should present the rationale, all findings, data interpretation, and recommendations that address the entire scope of the project. The poster will be given a letter grade on its own merits, to serve as the starting point for determining poster grades for individual team members. Each individual grade will be adjusted, if necessary, according to the results of the poster interview.

Poster grading criteria. The quality of the science will determine most of the grade. Does the poster place the most emphasis on the most important information? Are the results presented clearly and in a meaningul way? Are the conclusions and recommendations consistent with the results? In addition, does the poster present sufficient background information so that it can stand alone? Does the overall poster present the "big picture?" Was the poster carefully prepared, organized, and proofread? Does the poster have good visual appeal?

Poster interview. Each student will meet with one or both instructors to answer two or three questions about the results, conclusions, recommendations, rationale behind the visuals, etc. Following the interviews, aa student's poster grade may be adjusted up or down depending on the individual's knowledge of the rationale, familiarity with the analysis, ability to justify the recommendations, etc.

Characterization paper – 50%

The complete paper is to be uploaded into the individual's Drop Box by the due date listed in the timetable.

Each individual should attempt to identify his/her isolates down to species level and then select ONE isolate of interest to write up in a *Compendium* entry as described in the accompanying document (Characterization). Although only one isolate is to be written up, you are strongly advised to attempt characterization of more than one in case you lose a culture or run into a dead end. Each team should obtain as many unique isolates as they can find and divide them among team members for characterization. Criteria for evaluating the papers will include: adherence to guidellines for submission; appropriate content in each section; complete description of

isolate, discrrepancies accounted for; logical identification scheme, unequivocal; section on natural history reflects a reasonable effort, literature search.

"Performance factor"

We reserve the right to adjust a student's course grade based upon observations of laboratory performance. We may adjust a borderline grade up in the case of an outstanding performance (hopefully) or down in the event of a disappointing performance in the laboratory, inattention to safe laboratory practices, etc. (hopefully not!).

Additional policies

- Absences from scheduled meetings will be excused for the usual reasons, e.g., illness or family emergency
- Absences due to circumstances within a student's control (e.g., forgetting to show up or travel for interviews) cannot be excused and will be reflected in the performance grade; *Exception* – attending the presentation on preparing effective posters is highly recommended but optional
- All participants must engage in safe laboratory practices and abide by specific "rules" set down for this course
- An assignment that is submitted late will lose 10% per day including holidays and weekends

Honor code

As with all biosciences courses, the Rice University Honor Code applies to all personal conduct and assignments. Compliance with the honor code includes providing honest evaluations of yourself and your teammates.

Students with disabilities

Any student with a disability needing academic adjustments or accommodations should contact me (x3498 or caprette@rice.edu) as soon as possible and also contact Disabled Student Services in the Ley Student Center.

Dr. Caprette's office hours

Dr. Caprette's office hours

Week beginning	Monday	Tuesday	Wednesday	Thursday	Friday
Jan 11	10 am - noon	1 - 3 pm	10 am - noon	1 - 3 pm	no office hrs
Jan 18	MLK	1 - 3 pm	10 - 11 am	1 - 3 pm	no office hrs
Jan 25	10 am - noon	1 - 3 pm	10 - 11 am	1 - 3 pm	no office hrs
Feb 1	10 am - noon	1 - 3 pm	10 am - noon	1 - 3 pm	no office hrs
Feb 8	10 am - noon	no office hrs	10 am - noon	1 - 3 pm	no office hrs
Feb 15	10 am - noon	1 - 3 pm	10 am - noon	1 - 3 pm	no office hrs
Feb 22	10 am - noon	1 - 3 pm	10 - 11 am	1 - 3 pm	no office hrs
Feb 29	SPRING BREAK				
Mar 7	10 am - noon	no office hrs	10 - 11 am	no office hrs	no office hrs
Mar 14	10 am - noon	no office hrs	10 am - noon	no office hrs	no office hrs
Mar 21	10 am - noon	2 - 3 pm	10 am - noon	2 - 3 pm	no office hrs
Mar 28	10 am - noon	no office hrs	10 - 11 am	no office hrs	no office hrs
Apr 4	10 am - noon	no office hrs	10 am - noon	no office hrs	no office hrs
Apr 11	10 am - noon	1 - 3 pm	10 am - noon	1 - 3 pm	no office hrs
Apr 18	10 am - noon	no office hrs	10 - 11 am	1 - 3 pm	no office hrs

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Created by David R. Caprette (caprette@rice.edu), Rice University 24 May 00
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